

CLAIMS

What is claimed is:

1. An active noise attenuation system comprising:
an air inlet duct housing having an inlet end into which air is drawn and
5 an outlet end operably connected to an engine;
a sound detector for sensing noise emanating from said air inlet duct
and generating a noise signal corresponding to said noise;
a speaker mounted within said air inlet duct housing and facing said
inlet end;
10 a resonator supported by said housing and positioned between said
speaker and said engine for reducing low frequency engine noise; and
a controller for receiving and phase shifting said noise signal and
sending a control signal to said speaker to generate a sound field to attenuate said
noise.
15
2. A system according to claim 1 wherein said resonator attenuates said
low frequency noise resulting in an attenuated engine noise level and said sound
detector senses said attenuated engine noise level.
- 20 3. A system according to claim 1 including an air filter for filtering
contaminants from the air, said filter being positioned behind said speaker.

4. A system according to claim 3 wherein said resonator is mounted to said filter.

5. A system according to claim 4 wherein said filter is cylindrically shaped with a first end fitting over said resonator and a second end fitting over said outlet end.

6. A system according to claim 3 wherein said resonator extends outwardly from said housing between said filter and said engine.

10

7. A system according to claim 1 wherein said resonator reduces low frequency engine noise within a predetermined range.

8. A system according to claim 7 wherein said speaker is less than four hundred millimeters in diameter.

15

9. An active noise attenuation system comprising:
- a peak noise;
 - an air inlet duct housing having an inlet into which air is drawn and an
 - outlet operably connected to said engine;
 - a speaker mounted within said air inlet duct housing and facing said inlet;
 - an air filter mounted within said housing between said inlet and outlet for filtering contaminants from the air;
 - 10 a resonator supported by said housing and positioned between said speaker and said engine for attenuating said peak noise resulting in an attenuated low frequency engine noise;
 - a sound detector for sensing said attenuated low frequency engine noise and generating an attenuated low frequency engine noise signal; and
 - 15 a controller for receiving and phase shifting said attenuated low frequency engine noise signal and sending a control signal to said speaker to generate a sound field to attenuate said attenuated low frequency engine noise signal.
 - 20 10. A system according to claim 9 wherein said resonator attenuates said peak noise within a predetermined range.

11. A system according to claim 10 wherein said speaker is less than four hundred millimeters in diameter.

12. A system according to claim 10 wherein said filter is cylindrically
5 shaped with a first end fitting over said resonator and a second end fitting over said outlet end.

13. A system according to claim 20 wherein said resonator extends radially outward from said housing between said filter and said engine.

10